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Unlike several previous efforts that have discussed ecological forms of democracy in vague or esoteric terms, this article elucidates key factors that may affect the realization of ecological democracy. In the first section, ecological democracy is defined as an alternative democratic model that 1) strives to incorporate interested citizens into environmental decision-making, and 2) lacks structural features that systematically concentrate environmental amenities into the hands of particular social groups, while imposing environmental and ecological degradation on others. This leads to a discussion of several hindering and facilitating factors that either thwart or encourage ecological democracy. Two examples in support of this discussion on ecological democracy are provided: border contamination due to heavy industrial use along the US–Mexican border, and community forestry in the southeastern state of Oaxaca. By analyzing relevant factors that either have prevented or encouraged democratic environmental decision-making, this research will serve to improve environmental policy formulation and governance.

1. Introduction

Democracy has unquestionably achieved much around the globe during the past century. Nonetheless, some critics feel that its triumphs have mostly benefited privileged social sectors and wealthy nation-states (Dryzek, 1996a; Korten, 1995). According to many observers, political and neo-liberal institutional arrangements on a global scale have encouraged environmental degradation, shifting social and environmental costs to marginalized peoples (Barndt, 1999; Boyce, 1994; Hill, 2001; Martinez-Alier, 2002; Morton, 2000; Obi, 2000; Stephen, 2001; Williams, 1998). Existing societal institutions have done little to stem the spread of environmental crises such as global warming, severe water scarcities, urban smog, unchecked deforestation, and escalating species extinctions (Beck, 1999; Bunker, 1985; Lafferty and Meadowcroft, 1996).

While declining environmental conditions are worrisome, and although most democracies are inextricably linked to global markets and capitalism, it would be unfair to single out democracy, and in particular, "liberal" democracy, as the main culprit. Nonetheless, several troubling weaknesses in many liberal democratic arrangements can be singled out,

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some of which could be at least indirectly linked to deteriorating environments. Some feel that liberal democracies and their associated governance mechanisms have been ineffective at instilling participatory forms of decision-making (Dryzek, 1992) or in balancing the "paradoxes" of liberal and democratic traditions (Mouffe, 2000).[1] Elected representatives may not offer much for the common citizen to become involved beyond periodic elections, and often ignore minority voices (Williams, 1998). Other types of democracies also have their challenges. For instance, "direct democracy" with its face-to-face, participatory decision-making is relatively inefficient and infrequent beyond small-scale settings. Likewise, "deliberative democracy," which maintains that decisions must be deliberated among free and equal citizens, has been criticized for, among other reasons, its ambiguity over concepts such as "rationality" and "equality" (Mouffe, 1999), or its failure to accommodate activist concerns (Young, 2001). Thus, although liberal democracy is far from perfect, it has achieved widespread acceptance and will likely continue its expansive trend, even among environmentalists. Indeed, the environmental philosopher Simon Hailwood maintains that green values can likely be accommodated within liberalism compared to radical alternatives such as eco-anarchism (Hailwood, 2004).

It is also worth highlighting that the "neo-liberal" political and economic arrangements referred to above differ from liberal democracy. The former denotes a particular deference of free market, capitalist relations, or organizational mechanisms that are not necessarily compatible with liberal rights and guarantees for minorities and others. In short, many analysts blame our environmental woes more on these neo-liberal arrangements than due to weaknesses inherent to liberal democracies (e.g., Dryzek, 1992; Foster, 2000; Luke, 1999; cf. Ungaro, 2005).

Key distinctions among liberal and neo-liberal democracies notwithstanding, such challenges have led to calls for ecological and civic renewal, and various "green" political arrangements to achieve these aims (Dobson, 1995; Doherty and de Geus, 1996; Hailwood, 2004; Torgerson, 1999). Dominant paradigms in these debates include sustainable development and ecological modernization (Barry, 2003; Daly and Cobb, 1989; Jacobs, 1999; Novek and Kampen, 1992; Spaargaren and Mol, 1992), although these terms are often mistakenly equated; with the latter, ecological problems are treated as "technocratic" issues to be solved with adequate ingenuity, resources, and political will, but often disregarding the ecological limits to industrial expansion or rejecting demands for social equity and justice (Langhelle, 2000). Furthermore, according to some critics (Greer and Bruno, 1996; MacKendrick, 2003; Tokar, 1997), these theories or practices of environmental governance simply prescribe business as usual with a green tint. In contrast, the concept of "ecological democracy" appears to evoke participatory governance centered on healthy environments, social justice, and vigorous citizenship. However, given its similarity to related terms (e.g., political ecology, civic environmentalism, environmental justice), and lacking sufficient evidence to assess its utility, a sounder conceptualization of ecological democracy is seriously needed.

This article builds upon existing theory for the purposes of practical application and future empirical research on ecological democracy. In the first section, I provide a working definition of ecological democracy with four different scenarios. This is followed by a discussion of several hindering and facilitating factors that either thwart or support ecological democracy. In the second section, I use two empirical examples from Mexico to illustrate two key facets of ecological democracy: social justice and environmental management. I conclude that this effort will lead to a better conceptualization of ecological democracy, making it more concrete and less of a theoretical abstraction.

2. Conceptualizing ecological democracy

While still in its infancy, a handful of distinct insights have begun to take shape within the expanding body of scholarship that jointly examines environmental and political relationships. Supporting the contention that democratic environmental governance is possible, substantial writings on environmental politics and citizenship have been published in recent years (e.g., Dryzek, 1997; Faber, 1998; Mason, 1999; Minteer and Taylor, 2002; Morrison, 1995; Shutkin, 2000; Torgerson, 1999; Ungaro, 2005). For most Western countries, democratization has been a key element of environmental management and governance. In the United States, at least three periods of environmental protection occurred during the twentieth century: the conservation movement of the early to mid-1900s, the relatively successful environmental movement of the 1960s and 1970s, and the renewed environmental concern that arose in the late 1980s; all of these movements were supplanted by "democratic closure," or bureaucratic calls for scientific resource management and continued economic growth (Paehlke, 2002). Attempts to explain these interrelated environmental openings and democratic closures have led to a substantial body of work on "political ecology," or the merging of cultural ecology and political economy (Adger et al., 2001; Burns and LeMoyne, 2001; Dryzek, 1996b, 1997; Villanueva, 1995). With political ecology, dominant neo-capitalist arrangements in the Western world are believed to be grossly insufficient when it comes to addressing complex ecological problems (Dryzek, 1992; Morrison, 1995). This has led to a discourse of "green radicalism," which rejects the basic structure of industrial society and the way the environment is conceptualized, but promotes instead radical transformation in human awareness, economics, and politics (Dryzek, 1997).

Some scholars urge the replacement of these hegemonic economic and political arrangements with "autonomous public spheres," or discursive spaces in which diverse participants can "rationally" engage in democratic debate (Dryzek, 1992). These spheres may take the form of "analytical deliberative strategies" (Alario, 2000), in which concerned citizens would have opportunities to participate in setting environmental policy by joining the efforts of scientists and government officials. Furthermore, the development of a green public sphere is premised upon an ecologically motivated citizenship, or "civic environmentalism," whereby citizens assume a strong sense of civic responsibility for developing local solutions to environmental problems (Shutkin, 2000).

The argument for some, then, is that only participatory forms of democracy may create an ecologically sustainable society.[2] Other theorists have considered whether participatory or deliberative democracy is indeed compatible with environmental values. Andrew Dobson, for instance, makes explicit the lack of "fit" between meeting social objectives and ecological targets (Dobson, 1995). Still others have focused on the possibilities for deliberative democracy in natural resource management (Mitchell and Parkins, 2005; Parkins and Mitchell, 2005). Yet although deliberation clearly helps in some areas (e.g., transformation, self development), uncertainty exists whether environmentally friendly outcomes can be secured (Mason, 1999). Moreover, ecological degradation might proceed without harmonized plans of action or without agreement between parties based on reasoned argument. On the other hand, given the observation of many scholars that liberal democracies have become increasingly *in*effective at instilling participatory forms of decision-making, conflicts over the distribution of environmental amenities serve as a particularly intriguing area for future inquiry. Considering that the pursuit of individual preferences characteristic of liberal democracies has proven itself to be a decidedly poor means of distributing environmental amenities, environmental politics may be a central avenue for

facilitating the transformation of current forms of decision-making (see, e.g., Hailwood, 2004; Mason, 1999; Torgerson, 1999).

Another context in which the tension between environment and democracy is highlighted includes the numerous instances of political reaction to the inequitable distribution of environmental ills. The concentration of pollution and its impacts in certain neighborhoods and among certain groups, particularly women and minorities (Bullard, 1993; Cole and Foster, 2001; Melosi, 1997; Szasz, 1994), as well as rapid resource development in newly industrializing regions with lax environmental standards (Fritz, 1999), have given rise to locally based, ecologically democratic initiatives. The environmental justice movement, in particular, has been treated with tremendous optimism for its potential to reform environmental politics in a manner that prioritizes social welfare and democratic decision-making (Capek, 1993; Martinez-Alier, 2002; Schlosberg, 1999). The response by many communities to perceptions of environmental injustices may represent an avenue for the re-invigoration of, and the formation of new modes of exercise for, participatory democracy in modern social systems.

Since the relevant literature appears far from resolving these tensions and commonalities inherent to environment and democracy, this synopsis demonstrates that a more explicit definition of the concept of ecological democracy is needed. From this conceptual base, we can then take up the challenge of attempting to measure or evaluate it, or at least being able to recognize when and where it is occurring.

Ecological democracy defined

The notion of ecological democracy is often marked by definitional ambiguity and inadequate empirical evidence. Related terms such as "public ecology" (Robertson and Hull, 2001), "civic environmentalism" (Shutkin, 2000), and "liberation ecologies" (Peet and Watts, 1996), appear to also suffer these weaknesses, or may be overly prescriptive for constructive theoretical and empirical analysis. Some authors frame this discourse in specialized contexts such as ecofeminism (Gaard, 1998; Mies and Shiva, 1993) and ecoradicalism (Luke, 1999), both streams of literature which have been widely studied and theorized. These focused perspectives suffer certain limitations when compared to the more encompassing concept of "democracy," a central theme in sociology and political science. Democracy is a term that incorporates such diverse areas as social movements, electoral processes, civil rights (and obligations), equality, and participatory or representative governance. Yet, its attainment or existence is contested terrain (e.g., La Botz, 1995; Young, 2000). Even if "true" democracy exists, there may be several models or degrees of democracy (Held, 1996).

For this research, I chose ecological democracy as a conceptual tool, given the wide applicability, yet often-imprecise notion of *democratic* forms and processes related to the environment. Bringing democracy directly into the equation unpacks a rich theoretical and empirically measurable body of literature from the vantage of multiple scales, positions, and actors to interested researchers. While the study and application of democracy might be the key to future environmental management, few examples exist where ecological democracy has been empirically tested (cf., Dietz et al., 2001). Moreover, key factors that may hinder or facilitate its attainment need better elucidation. An integrated version of ecological democracy would outline an empirically measurable framework with appropriate indicators or features that could be tested, compared, and adapted to any given scenario involving environmental governance/justice (or lack thereof).

Ecological democracy can be conceived as an alternative democratic model that: 1) strives to incorporate interested citizens into environmental decision-making, and 2) lacks structural features that systematically concentrate environmental amenities into the hands of particular social groups, while imposing environmental and ecological degradation on others (Mitchell, 2005a). Ecological democracy appears whenever citizens are freely incorporated into inclusive environmental decision-making—or, at minimum, those desiring to participate are provided with meaningful opportunities to do so, and their input well considered. Moreover, environmental "bads" such as industrial pollution and rampant deforestation would not be passed on to any specific group. Ideally, both technoscientific and alternative forms of knowledge and experience would be encouraged, as well as adequate space provided for citizen activism and legal-political avenues. Certainly no guarantee exists that a reformed democracy will produce desired ends such as sustainable development, decreased environmental degradation, greater public participation, or more equal distribution of environmental benefits and burdens. An ecological democratic system could conceivably fail on any or all of these ends, not least because all these ends may not themselves be compatible with one another. These concerns notwithstanding and for the purposes of this analysis, ecological democracy is premised on the hypothesis that environmental improvement is positively associated with the presence of participatory democratic institutions (see, e.g., Menegat, 2002), and the future health of existing democracies is premised upon the equitable distribution of environmental resources.

Ecological democracy scenarios

Four potential states that illustrate various tensions and commonalities of ecological democracy are presented in Figure 1. Democracy is simply categorized as "open" (democratic) or "closed" (autocratic), and ecology as "green" (sustainable) or "brown" (unsustainable). In reality, many dynamic gray areas will overlap boundaries, even within a given situation with its varying ideological, locational, temporal, moral, or other circumstances. Still, these scenarios do serve as ideal types for the purposes of comparing or contrasting differing states of ecological democracy.

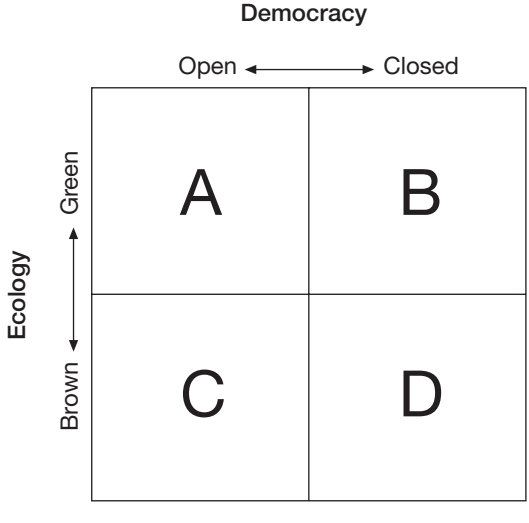

Figure 1. Scenarios of ecological democracy.

Scenario A—the optimist. This Win–Win scenario combines open democracy with green ecology, achieving the highest possible state of ecological democracy. Informed, inclusive, and participatory decision-making is successfully combined with environmental sustainability for the benefit of all. Participating citizens willingly compromise certain individual gains by deliberating together to promote social and ecological well-being. An example is a community-oriented forestry operation employing sustainable logging practices (e.g., selective cutting of poor quality trees using low-impact techniques and silvicultural practices that favor ecological health). Economic earnings are equitably shared and decisions made on a participatory, inclusive basis.

Scenario B—the ecocrat. This Lose–Win scenario combines closed democracy with green ecology. Ecological well-being is achieved at the expense of democratic principles by invoking strict environmental protection policies detrimental to certain groups. Decision-making and management follow centralized, hierarchical avenues of control. An example is the removal of human inhabitants for the designation of a "wilderness" area. External concerns are prioritized over basic civil liberties of local residents, including the right for sustainable livelihoods.

Scenario C—the democrat. This Win–Lose scenario combines open democracy with brown ecology. Citizens have full access to informed decision-making, but ecological well-being is not a priority. Substantial environmental degradation takes place by chance or design. An example is a community's decision to endorse a strip coalmine on an area of critical biological and watershed significance. While the process may have been open, inclusive, and consensual, this decision could have serious negative consequences for the local environment and those who rely upon its healthy functioning.

Scenario D—the status quo. This Lose–Lose scenario combines closed democracy with brown ecology. Entirely market-driven decision-making greatly expands environmental degradation. It complements and reinforces the neo-liberal, hyper-capitalist paradigm; namely, global market control driven by speculation, competition, and consumerism, but leading to worldwide environmental degradation. An industrializing nation that favors polluting, resource-intensive manufacturing for rapid economic growth serves as a prototypical example. Severe social costs and subsequent environmental deterioration accompany highly selective wealth. Hence, we end up with two "losers" (e.g., Boyce, 1994).

"Scenario A" describes a truly successful ecological democracy, although the possibility may remain an idealistic dream under current circumstances. It encapsulates "robustness," or the idea that our expectations of society toward science and the environment are changing as people demand ever-greater involvement in democratic decision-making (Nowotny et al., 2001). A precautionary principle is adopted to minimize global warming and other environmental risks. Progressive environmental policies are implemented by strict enforcement of polluters and rewards proffered for clean industrial initiatives. Environmental degradation is not passed on to any specific group or individual, and local ecological management is highly encouraged.

In contrast, "Scenario D" more realistically defines current global conditions. Certain classes and places are privileged by a "privatized environment" policy, leading to an unequal distribution of health and environmental hazards (Schrecker, 2002). Two promising changes are occurring, however. In some instances, progressive environmental agencies are trying innovative models that incorporate alternative forms of ecological knowledge, and even making some room for public involvement. In other cases, local or regional governments have adopted experimental cases of citizen-led governance. However, the former continues to allow environmental science to take the lead, whereas the latter encourages citizen involvement but may neglect "green" aspects. At minimum, such willingness to

change suggests that some groups are perhaps steering towards "true" or an idealized version of ecological democracy.

Hindering factors

Several factors hinder the potential for ecological democracy as represented by "Scenario A." Five hindering factors discussed here include international capital, closed democratic systems, the premise of equality of conditions, scientific prioritization, and ineffective or nonexistent mediating structures that serve as a conduit for democracy.

First, a global political economy of international capital, development, and regulatory arrangements favors powerful interests (Dryzek, 1996a; Hettne, 1995), while concurrently shifting industry-generated environmental ills to weaker actors (Bullard, 1993; Shrader-Frechette, 2002), often with government complicity (Gould et al., 1996). Furthermore, companies feeling "harassed" by environmentalists and tough environmental regulations, but blaming economic factors, may shift operations to less problematic countries with Export Processing Zones (EPZs) (Frey, 2003).

Second, closed democratic systems are antithetical to ecological democracy by definition, but they may actually increase environmental impacts (Dietz et al., 2001; Winslow, 2005).[3] For example, peripheral countries with high levels of political repression tend to be highly carbon intensive and their nation-states often assume less responsibility for environmental protection, presumably to keep production costs competitive (Roberts et al., 2003).[4] On the other hand, wealthier countries might improve their environments by "displacing" ecological risks and burdens elsewhere, such as shipping toxic wastes or locating ecologically degrading production processes outside the home state, or even globally in the case of climate change. Still, a generally putative positive relationship between democracy and ecological well-being/health is presumed to exist by most accounts. In any case, democracies are not homogeneous: "certain characteristics that help determine the level of democracy in a nation, such as the free flow of information or the level of corruption, are important determinants of how successfully a democratic government can and will control environmental degradation" (Winslow, 2005: 781).

Third, institutionally imposed social inequities hinder the attainment of ecological democracy. With the publicity generated from Love Canal, Three Mile Island, Chernobyl, Bhopal, and other environmental crises, a burgeoning environmental justice movement has highlighted how racial, gender, and/or class differences are implicated in environmental inequities (Bullard and Johnson, 2000; Kalof et al., 2002). Strong evidence of racially distributed pollution can be found in Louisiana's Cancer Alley, for instance (Roberts and Toffolon-Weiss, 2001). Gender inequities that shift environmental ills to working and nursing women have been brought out in public light by the ecofeminism movement (de Chiro, 1998; Gaard, 1998; Mies and Shiva, 1993). A class focus "helps reveal that workers in their workplaces and homes are more vulnerable to environmental hazards than the affluent" (Torgerson, 1999: 46), since the working class stand to lose a healthy existence and scarce jobs.

Fourth, current policies and programs prioritize scientific sources of information over alternative forms of knowledge. While specialized scientific and technological information helps policymakers, planners, and researchers understand complex technologies and ecosystems, this is hardly conducive to greater public involvement in environmental management. During the twentieth century, government and industry have given precedence to scientific solutions to address environmental challenges (Fischer, 2000). Even environmental nongovernmental organizations (NGOs) have relied on scientific findings, often hiring their own

experts. In the process, technical and normative questions are often kept out of ordinary citizens' hands irrespective of their increased exposure to environmental risk (Beck, 1995, 1999). Moreover, ecological democracy is impeded when science is used to increase production, consumption, and profits instead of in understanding and reducing environmental impacts (Schnaiberg, 1980). Alternative information sources such as indigenous, layperson, or local knowledge are often ignored or downgraded (e.g., Berkes, 1999; Fischer, 2000; Wiersum, 2000). While lay or public knowledge is not necessarily truer, better, or greener (Wynne, 1994), in an age of risk and uncertainty, more input from diverse sources for scientific and technical assessments can only help improve decision-making. That is, if "improved" administration and governance is measured by fairness, transparency, accountability, robustness, and other "socio-cultural" variables (e.g., Bullard and Johnson, 2000; Hull and Robinson, 2000; Nowotny et al., 2001; Smith and McDonough, 2001).

Fifth, how current mediating structures perpetuate existing inequalities is particularly evident in environmental politics (Buttel, 1998; Couto and Guthrie, 1999; Price, 1980). Mediating structures include non-profit sectors, civic associations, voluntary associations, and similar organized bodies. There are both positive and negative consequences attributable to mediating structures. On the one hand, such structures have been designed to intervene on behalf of the public, acting in our best interest. In regions such as Chiapas in southern Mexico, mediating structures have included supportive NGOs that trained or informed leaders during the mid-1990s and helped the rebels gain access to the Internet for increased media attention (Harvey, 1999; Rich, 1997; Stephen, 1998). Recent research has differed on whether these mediating structures should be considered as alternatives to governmental action (Putnam, 1993), or as essential fora in which democratically sound government action is defined (Couto and Guthrie, 1999).

In contrast, others are skeptical of the potential of mediating structures, highlighting their ability to become instruments of privilege (Salamon, 1993 cited in Couto and Guthrie, 1999); their inaccessibility among the poor and powerless (Price, 1980); their tendency to evolve into oligarchic institutions, where political power is concentrated in the hands of major players (Piven and Cloward, 1979); or the tendency among many to represent particularistic agendas and lack wider ties to society (Barber, 1984). Citizen activism, with experiential learning that builds social capital (Couto and Guthrie, 1999), may go much further than formalized and often top-down mediating bodies in consolidating democracies (cf., Young, 2001). As described above, mediating structures pertaining to the mainstream environmental movement are dominated by Western-based agencies, which often prioritize conservationist (nature) over humanistic (social) agendas, although there is some hope for reconciliation among the two agendas (see Martinez-Alier, 2002: 168–212). Such NGOs may be well meaning but can also end up implementing programs without adequate understanding of local realities and needs. They may also lack accountability in local regions when offering solutions to environmental challenges. At any rate, the ineffectiveness, unsuitability, or absence of mediating structures may represent barriers to ecological democracy.

Facilitating factors

Many factors also facilitate ecological democracy. Five factors that may be particularly relevant include environmental altruism, discursive democracy, perceptions of environmental crises, cultures supportive of participatory democracy, and local–global networks.

First, environmental altruism, defined by one's degree of selflessness with respect to the environment, would be necessary to the emergence of ecological democracy. Recent

theoretical work suggests, ironically, that the structurally disadvantaged in society are more likely to shun narrow self-interest in favor of positions that take into account the situation of others (Stern et al., 1999). This may be especially so concerning one's family, health, and the environment. For example, Linda Kalof and her colleagues measured altruism and other values on environmentalism (Kalof et al., 2002). Their findings included that White men as a group were less environmentally altruistic compared to other groups (e.g., Black women, Black men, Hispanic men, etc.). Some differences were attributable to factors such as risk perception, shared experiences of repression, and dependence on "common pool" resources (Kalof et al., 2002). In contrast, it has been contended that self-interest or neighborhood concerns may spur people into civic engagement more than altruism (Greenberg, 2001). Yet, given that certain groups have historically been subjects of discrimination and disadvantage (e.g., on the basis of gender, race, or ethnicity), it could be posited that their empowerment may facilitate altruistic dialogue (Dietz et al., 2001). Nevertheless, altruistic dialogue among disempowered groups may only apply to certain circumstances or certain groups. It is also likely that some repressed groups, such as marginalized minority groups in large urban centers fighting for clean neighborhoods, would prefer retributive and compensatory justice for past wrongs rather than democratic dialogue with power holders.

Second, ecological democracy could be facilitated by discursive modes of communication that invigorate citizenship to deal with environmental problems. Deliberation, or deliberative democracy as elucidated by sociologist Jürgen Habermas, among others, is open discussion and debate that attempts to produce reasonable, well-informed opinion within a representative body of citizens, or stakeholders. Yet, few examples exist where the public has been adequately considered in environmental planning or policy setting exercises; by "adequate," this should mean inclusiveness, openness, trust-building, and informed, among other values or conditions (Brechin, 1999; Hull and Robinson, 2000; Parkins and Mitchell, 2005; Warren, 1999; Williams, 1998; Young, 2000). Public input is often sacrificed by administrative operations of environmental agencies in the name of efficiency (Torgerson, 1999). In contrast, deliberative democracy insists on citizens as active players in decision-making rather than simply offering them the opportunity to become involved, with green spaces that are "inherently committed to [public] debate—not just to tolerate but to cultivate and provoke disagreements" (Torgerson, 1999: 161), particularly among societal actors with heterogeneous views. Focused attention to expanded sources of "facts" and opinions from diverse sources to inform environmental decision-making could invoke discursive modes of democracy (Dryzek, 1992). The development of a green public sphere would be premised upon an ecologically motivated citizenship, whereby citizens assume a strong sense of civic responsibility for developing local solutions to environmental problems (Shutkin, 2000). Participating in environmental issues may also instill greater confidence in government and industry. Hence, discursive democracy may counter the failure of market and state decision-makers to facilitate citizenship in forestry and watershed management.

Third, studies of environmental justice imply that perceptions of environmental crisis re-stimulate the pursuit of democratic principles, and ultimately improve mediating structures through the mobilization of concerned citizens (Capek, 1993; Shrader-Frechette, 2002).[5] This literature also suggests that those suffering from environmental injustices should be afforded greater influence in decision-making. Moreover, many citizens are more likely to become involved in issues involving neighborhood and family health, which describes many ecological dilemmas (see, e.g., Shutkin, 2000; Torgerson, 1999). Where citizens have suffered ecological and social injustices, they may feel intrinsically motivated to become environmental advocates, possibly leading to formalize environmental management mechanisms. Examples in the United States include the late Judi Bari of EarthFirst!

and Lois Marie Gibbs of the Citizens Clearinghouse for Hazardous Waste. Environmental advocates often remain politically active long after their initial activism, extending their democratic experiences into other arenas of benefit to society (Krauss, 1989).

Fourth, certain cultures supportive of participatory democracy may be more amenable to ecological democracy. In some societal circles where exceptionally formalized, technocratic decision-making predominates, and as discussed above in the fourth hindering factor, participation in environmental planning and management may be restricted. Impediments for public participation may also arise due to cultural factors (for example, language difficulties or traditional protocol may prevent certain individuals from speaking out), procedural impediments (such as when allotted time for discussion and debate is limited), or strategic motives (inadequate communication and information sharing may be used to group advantage). In contrast, some cultures have a shared tradition of strong cooperative relationships and organizational practices, collective land ownership and management, and well-engrained cultural patterns that reinforce long-held local decision-making mechanisms (Cohen, 1999). Together with the deference for generational benefits (i.e., long term) exhibited by certain cultures, these socio-cultural strengths may actually favor ecological democracy under the right set of circumstances.[6]

Fifth, the rise and spread of local–global social networks may facilitate ecological democracy. Such networks include anti-globalization social movements (e.g., anti-World Trade Organization (WTO) protests and the Chiapas rebellion), as well as localized struggles such as NIMBYs (Not In My Backyard). While this seems to refute arguments made earlier about ineffective mediating structures, social networks have helped to advance international awareness on socio-ecological challenges, recent or not (Dreiling and Wolf, 2001; Gills, 2000; Lipschutz and Mayer, 1996; Princen and Finger, 1994). The rapid rise in communication technologies has reached even the remotest corners of the globe, and brought the plights of isolated people to the media forefront. For example, during the 1990s, the case of the Ogoni of Nigeria and Shell Oil made international headlines as local and global NGOs worked together (Obi, 2000). Still, while NGOs may represent an important option for citizens to address environmental injustice (Shrader-Frechette, 2002), they may be most applicable to citizens of those nations with unsupportive or authoritarian governments. Under such circumstances, local–global networks could foster solidarity or shared citizenship across racial, gender, class, and North–South lines. This occurred to some extent during the 1992 Rio Summit on the United Nations Conference on Environment and Development (UNCED).

With ecological democracy defined and described, we can now turn our attention to two empirical examples from Mexico. These illustrate a form of ecological democracy at the neighborhood or community level, and both entail transnational aspects to some extent, especially the first example. While it would have been useful to examine several cases indicative of each of the aforementioned four scenarios of ecological democracy, limitations of space restrict a thorough analysis of all idealized types here. Instead, two examples indicative of the two extremes were selected: the first to represent “Scenario D” and the second case to represent “Scenario A.” This analysis also employs the hindering and facilitating factors of ecological democracy mentioned above.

3. Democracy and environmental justice in Mexico

In recent decades, left populism in Mexico and movements for environmental justice in the United States have broadened the call for ecological democracy (Faber, 1998: 11). Yet,

whereas social justice and resistance movements have been analyzed from a Zapatista standpoint (e.g., Barry, 1995; Harvey, 1998, 1999; Morton, 2000), and Mexican environmentalism to some extent (Simon, 1997; Simonian, 1995), environmental justice in Mexico has not been adequately considered.[7]

The notion of justice has been deeply ingrained in the Mexican psyche ever since the Spanish conquest. Resistance movements in Mexico over land access and social justice occurred throughout the nineteenth and twentieth centuries (Barry, 1995). Widespread corruption, cronyism, authoritarianism, and violence have long tainted national and regional politics throughout Mexico (Krauze, 1997). Commercial and illegal logging (Guerrero et al., 2000; O'Brien, 1998), industrial pollution along the Mexican–United States border (Hill, 2001; Roberts and Thanos, 2003), land conflicts (Harvey, 1998), and dam projects (Hindley, 1999) have all served as significant stimuli for local mobilization since the 1960s. Marginalized Mexicans have at times retaliated against expansive capitalism, a tendency embodied most recently in the 1994 Zapatista rebellion at the launch of the North American Free Trade Agreement (NAFTA) (Barry, 1995). The Zapatista dispute also involves issues of environment (e.g., proprietary rights for agricultural and forestry purposes) and democratic principles (e.g., liberty, citizenship, and other freedoms). More recently, some environmental defenders have been imprisoned or killed for organizing against powerful logging barons and drug lords (Smith, 2000).[8] Also, with the massive restructuring of the Mexican economy since the late 1980s that has favored commercial agriculture and urban-to-rural colonization, many peasants have been left with little choice but to cut down forests and convert "marginal" land for agricultural purposes (Manuel Torres-Rojo and Flores-Xolocotzi, 2001).

Environmental consciousness has been gaining strength among many Mexicans (Hindley, 1999; Simonian, 1995), perhaps recognizing that equality of conditions has been largely working against them. Nonetheless, theirs is not the mainstream environmentalism typical of many Northern environmental groups.[9] Mexican environmental activists are often the rural poor who link their public claims for justice to sustainable development (Bray, 1995; Smith, 2000). In one study based in the state of Campeche, a clear distinction was made between environmentally concerned urban dwellers (*ecolocos*, or crazy ecologists) and rural inhabitants: "Many rural people [of Campeche's tropical lowlands] . . . seem to have a more acute and holistic sense of the threshold of ecological damage that has been reached and the implications for their way of life in the future" (Gates, 1998: 169). Has this emergent consciousness been a factor in one of the most severely contaminated areas in Mexico—its northern border? This case, representing "Scenario D" (status quo), is discussed in detail below.

Border pollution: Scenario D

Few dispute that pollution affects much of Mexico's northern border region (Hill, 2001; Roberts and Thanos, 2003; Frey, 2003). For instance, Scott Frey (2003) cites significant evidence of environmental pollution caused by the *maquiladora* sector, arguing that transferring hazardous industries from core nations has unacceptably increased health, safety, and environmental risks. These risks have included increased respiratory diseases, cancer, birth defects, and severe environmental pressures (e.g., inadequate drinking water, poor sewage services, improper waste disposal, air and water pollution).

These problems have not been handled well, partly because bureaucratic responses to environmental dilemmas differ markedly between Mexico and the United States. To take only one indicator, government expenditures on environmental services per capita in 1996

were US$3,900 in the United States and just US$500 in Mexico (OECD, 1998). Even if the regulations were adequate, their implementation suffers from insufficient enforcement capacity (Davidson and Mitchell, 2002: 280). Moreover, little recourse is available for Mexican citizens who wish to pressure government and industry to clean up or reduce environmental contamination. Citizens who believe Mexico is failing to enforce its environmental laws have the option to submit a complaint to the Commission for Environmental Cooperation (CEC) of NAFTA. However, this is a costly and lengthy process, which often requires considerable legal and political experience. As such, it can be argued that "Scenario D," the status quo in Figure 1, accurately depicts the border region: a "lose–lose" scenario for ecology and democracy alike.

One specific case of contamination along the northern border region involves the American-owned company Metales y Derivados in Tijuana, which took in thousands of car and boat batteries from the United States, extracted their lead, and then melted them into bricks to be shipped across the border. In 1994, Metales abandoned their smelter and left behind an estimated 8,500 tons of lead and cadmium toxins (Sullivan, 2003). Wind and rain constantly dump toxins in Colonia Chilpancingo, a workers' village of 1,000 people directly below the plant. This case was submitted to NAFTA's CEC, which released its factual record in 2003. A factual record is merely an evaluation and description of matters asserted by the Submitter and the Party.

No guarantee exists that anything will be done to change this "Scenario D" into something more positive, even though this factual record has been made public. Although it is hard to prove if the Metales site is directly responsible, people continue to get sick. Twenty Chilpancingo children under the age of six were tested for lead in December 2002, and the results showed significant and potentially dangerous levels of lead in their bloodstreams (Sullivan, 2003). It is unclear if scientific solutions will address these environmental and health challenges, but on the other hand both government and industry have been quick to dismiss public claims of ill effects (Roberts and Thanos, 2003).

Despite these odds, one local group has managed to make some headway. As already noted, in certain regions, some environmental NGOs have begun to facilitate the emergence of ecological democracy. They may represent a viable means for curbing the adverse consequences associated with hazardous facilities (Frey, 2003). One such NGO is the Tijuana-based, non-profit organization Comité Ciudadano Pro-Restauración del Cañón del Padre (Pro-Restoration Citizen Committee of the El Padre Canyon).[10] The Comité Ciudadano organizes local people to fight against pollution and worker exploitation, and advocates for increased public participation in local political processes. The group has achieved several significant accomplishments: the permanent closure of two lead smelters that posed serious environmental and health risks (including Metales y Derivados), the removal of unresponsive elected officials, and the enforcement of environmental laws that resulted in the issuance of penalties and citations.

In sum, at least four hindering factors previously noted have prevented the emergence of ecological democracy in the Mexican–United States border region. These include international capital, closed democratic systems, unfavorable equality of conditions, and ineffective mediating structures. International neo-liberal arrangements have encouraged heavy (pollution intensive) industry and lax enforcement of environmental regulatory mechanisms. Concessions to northern transnational corporations (TNCs) wishing to establish factories on the Mexican side of the border include tax holidays, labor and environmental exemptions, provision of infrastructure, duty-free export and import, and free reparation of profits (Frey, 2003). Equality of current relations of production favors industry, not labor. The *maquiladora* sector has been structured to encourage low-wage female labor

with limited opportunities for unionization (Barndt, 1999). Since the establishment of the *maquiladoras* starting in the 1960s, the Mexican government has stifled debate or dissension from ordinary citizens on social and health hazards. Pollution is often ignored or denied by state and industry officials, and few opportunities provided for citizens who question scientific results that absolve border industries from blame. Hence, a transnational political economy has negatively affected the emergence of ecological democracy.

On the other hand, a few facilitating factors suggest that change is possible, even in poor, polluted neighborhoods of Tijuana: perceptions of environmental crisis (evidence of contaminants and perceived linkages to increased health problems), environmental altruism (some structurally disadvantaged residents beginning to advocate for a cleaner environment), the presence of a strong local culture that supports participatory action (self-organization and local protests), and local–global networks (Comité Ciudadano and CEC). However, genuine willingness on the part of industry and state entities is needed to change the "Scenario D" status of the border region. Such a situation seems unlikely in the near future given the deep-seated hindering factors already mentioned.

Community forests: moving toward Scenario A

A more positive version of ecological democracy is illustrated by the Mexican community forest sector. Since the 1917 Mexican Constitution was passed after the Revolution (1910–17), various forestry and environmental acts have been proposed, implemented, and reformed (Simonian, 1995). Yet, except for the extensive land reforms directed by Mexican President Lázaro Cárdenas (1934–40), accompanied by the creation of a national peasant federation, these policy changes have favored large-scale corporate use of forest and agricultural land. The trend to commercialization, however, reached its peak during President Carlos Salinas de Gotari's (1988–94) administration of market-friendly neoliberalism (Beaucage, 1998).

The first stirrings of community protest against private and parastatal forest concessions emerged in 1968 when 14 communities in the Sierra Norte of Oaxaca led a five-year boycott of a parastatal paper factory, protesting against mistreatment of their people and forests (Bray, 1991). In 1979, 26 indigenous communities in Oaxaca created an organization to "defend together our natural resources, principally our forests, to develop our people and defend our organization from the political and educational apparatus of the state" (SEDUE, 1986: 89). By the early 1980s, Mexican communities had successfully wrested forestland control from the forest companies, and many have successfully established forest enterprises (Bray et al., 2003). Years of protests, blockades, letter writing, marches to Mexico City, meetings with government officials, and legal actions had finally paid off. With an estimated 80 percent of its forestlands now directly in the hands of communities and *ejidos*, Mexico is unique in the world for communal forest management (Bray et al., 2003).[11]

Community forest successes obscure the fact that many hurdles remain. Only about 12 percent of the approximately 8,000 communities with forests are legally engaged in forest commercialization (J.M. Torres-Rojo, 2002, personal communication). Increasing deforestation from agriculture conversion, illegal logging, forest fires, marginalization of rural people by state agencies, and land conflicts are some of the main challenges currently facing forest-based communities in Mexico (Cairns et al., 1995; Gates, 1998; Klooster, 1997). Moreover, old entrenched patterns of *caciquismo* (regional bossism), manipulation, and corruption still exist through much of Mexico (Ai Camp, 1999; Beaucage, 1998; Fox, 1994; Krauze, 1997). Forest-based advocacy has not always achieved solutions to these ongoing political and environmental challenges, but it has certainly helped. In the past few years, for example,

indigenous leaders, *ejido* residents, NGOs, and others of the Sierra Tarahumara in Chihuahua have filed hundreds of citizen complaints about illegal cutting and other unsustainable forestry practices (Guerrero et al., 2000). They question whether forestry operations in the Sierra Tarahumara are complying with their forest management plans and identify protected areas that would help sustain the Sierra's biodiversity and indigenous communities (Guerrero et al., 2000).

In Mexico, like in most countries, few opportunities exist for regional or national natural resource policy setting and management. This hindering factor has led to a "paradox of public involvement" since citizens expect cutting-edge scientific and technical knowledge to guide them (Walker and Daniels, 2001), but they remain skeptical about science's abilities to solve problems exclusive of civic input (Nowotny et al., 2001).

On the other hand, examples of socially and environmentally responsible forest management can be found in Mexico. Recent research by the author in the Sierra Norte of the southern state of Oaxaca indicates that forest-based communities characterized by a long tradition of healthy cooperative relationships (internally and externally), strong communal decision-making practices, and sufficient forested lands are less likely to engage in destructive practices. Common pool resources are being managed in such a way to avoid Garret Hardin's (1968) "tragedy of the commons," precisely because they are embedded in a communal set of internal regulations that prevents resource over-use and degradation. Indeed, communal forestry management offers new hopes for environmental and democratic sustainability in Mexico thanks to these innovative shared resource arrangements (Mitchell, 2005b).

Several forest communities in the Sierra Norte recognize the importance of their forests in providing clean water, checking soil erosion, and sustaining life. Forest management is carried out through internally regulated decision-making rules and norms (with sanctions), but with the cooperation and monitoring of state agencies, including the Ministry of Environment and Natural Resources (SEMARNAT). The World Wildlife Fund (WWF)-Oaxaca program and SEMARNAT have helped finance forest certification for several communities. Many local NGOs and government agencies (mediating structures) are training forest workers and administrators in techniques such as the use of Global Positioning Systems (GPS), pest control, and modern accounting methods. Several Sierra Norte communities now harvest and process pine trees themselves into diverse wood products.[12] Non-timber uses also provide supplementary incomes for some forest-based communities. These uses include the collection of ornamental plants and mushrooms, pine resin tapping, and provision of ecotourism services. Depending upon the community, profits from forest operations are shared among residents, spent on community social services, and/or reinvested in forest equipment (replacements, additions, and maintenance) and silviculture.

Additionally, sharing of social-economic benefits is common among Oaxacan indigenous groups who often consider both present and future generations in their activities (Cohen, 1999). This rhetoric of sharing, equality, and generational benefits (i.e., leaving enough for one's children) is expressed by many residents in Oaxacan forest communities such as the ones studied for this research. Furthermore, the decision-making mechanisms for managing and enjoying these immediate and future benefits are arguably participatory and deliberatory by intent, if not in practice. Community assemblies are the main venue where majority voting is conducted on crucial agrarian and forestry issues.

However, I qualify these sharing mechanisms since there are obvious abuses of privilege or exclusion by gender, residency status, and other crucial demographic aspects. For instance, while some women are involved in some forestry activities such as tree nursery management, for the most part, local women are expected to fulfill domestic and reproductive duties in Oaxacan rural communities (Dalton, 2003; Vázquez García, 2001). To

be considered democratic by most definitions, management processes should accommodate greater input from local women and other current non-participants (e.g., youth, non-native residents). Yet, there is recognition of such deficiencies among several community authorities interviewed for this research, and new democratic opportunities are starting to appear, albeit slowly (e.g., Dalton, 2003).

Summing up, community forestry in the Sierra Norte has been aided by five facilitating factors of ecological democracy: perceptions of environmental crisis, environmental altruism, deliberative forms of democracy, local–global networks, and the presence of a strong local culture that supports participatory action for some. Perhaps a key reason for the success of community-based forestry is that it favors communal principles of production over capitalist ones, and prioritizes social over economic benefits. Upon realizing that the former forest companies were degrading their environment, Sierra Norte communities acted collectively to make far-reaching, institutional changes, not all of which have been profit-oriented. Community actions shifted from early protests to complex procedural and regulatory changes. These have profited (formerly) structurally disadvantaged residents who advocated for healthier forests and direct economic benefits. Several community interviewees suggested that they were altruistically motivated to favor community and forest well-being over individual gains. Local–global networks have been established that favor community forest planning, management, and monitoring. In Oaxaca, these linkages have been mainly pushed by the WWF and FSC, and have helped position several communities as showcases to national and global agencies, generating new expressions of collaboration and support. Alternative forms of revenues are being incorporated by the collection and sales of forest botanicals, which would have been deemed unprofitable during the forest concession years. Lastly, none of the above would have been possible without strong local cultures that, on the face of it, encourage citizen participation in forest management. An important caveat, however, is the notable absence of women in key positions and meetings.

Primary hindering and facilitating features of both examples are described in Table 1. In short, ecological resistance seems to emerge from within cultures that express (or are capable and willing of expressing) strong participatory action at the local level, and are best equipped through mutual cooperation and shared networks to deal with a political economy positioned largely against their interests. While ecological democracy has not been realized

Table 1. Hindering and facilitating factors of ecological democracy in case examples

	Factor involved in case study	
Ecological democracy	Border pollution	Community forestry
Hindering factors		
1. International capital	Yes	Yes
2. Closed democratic systems	Yes	No
3. Unfavorable equality of conditions	Yes	No
4. Scientific prioritization	Unclear	No
5. Ineffective mediating structures	Yes	No
Facilitating factors		
1. Environmental altruism	Likely	Yes
2. Deliberative democracy	No	Yes
3. Perceptions of environmental crisis	Yes	Yes
4. Cultures supportive of participatory democracy	Likely	Yes
5. Local–global networks	Yes	Yes

in the first case, and suffers from certain deficiencies in the second case, these examples highlight various factors: to name a few, the premise of equality of conditions, especially in the first case; citizen competence, with local residents questioning government and industry agencies about the "facts" of health hazards or industrial logging; and the need for mediating structures, such as diverse participatory fora that enhance citizenship. Such opportunities mainly include local governance structures, but may also be extended to regional, national, or even international government agencies and NGOs. Improving these supportive and effective mediating structures, for instance, would serve as a conduit for democracy by facilitating open and inclusive participation and enhancing sense of ownership in environmental decision-making. A more equitable and civic-oriented focus on green politics that considers multiple scales and actors may lessen the impact of any environmental blues.

4. Conclusion

Unlike previous efforts that have often discussed ecological forms of democracy in vague or esoteric terms, this article has empirically elucidated what may affect the realization of ecological democracy. After providing an explicit definition for the term, four idealized scenarios were examined that illustrate various transitional states of ecological democracy. Empirical characteristics of ecological democracy, focusing on five hindering and five facilitating factors, were then discussed. The former include international capital, closed democratic systems, the premise of equality of conditions, scientific prioritization, and ineffective or nonexistent mediating structures that serve as a conduit for democracy; the latter include environmental altruism, discursive democracy, perceptions of environmental crisis, local–global networks, and cultures supportive of participatory democracy. Two examples in support of this discussion were then provided; in the first case, border contamination due to heavy industrial use along the US–Mexican border, and in the second case, community forestry in the southeastern state of Oaxaca.

As shown by the community forest example, both ecological and democratic principles can be integrated through concerted civic actions, with fair, inclusive policy and practices directed toward positive environmental and social well-being. Local reactions to perceived environmental "bads" can establish new arenas for political participation, particularly among those cultures supportive of participatory mechanisms (Davidson and Freudenburg, 1996; McCay and Acheson, 1987). While such instances of "Scenario A" will likely continue to be the exception in the near future, definite progress has been made for environmental citizenship in Mexico, and may be evidenced in other regions characterized by similar facilitating factors. This analysis has also shown that political economy is a central factor affecting the emergence or hindering of ecological democracy, and suggests that perhaps only non-capitalist or regulated capitalist economic relations can be compatible with ecological democracy and "genuine" sustainable development.

Lastly, this article provides a working definition and analytical framework of ecological democracy more conducive to empirical accounts than some previous works (e.g., Faber, 1998; Morrison, 1995; Shutkin, 2000). The insight herein can be treated as an evaluative tool for policymakers, practitioners, activists, educators, and researchers. In addition, the framework laid out in this article concedes that hindering and facilitating factors of ecological democracy may vary, and ways to assess them may also differ. Continued research on ecological democracy will provide greater understanding on where we are headed and how we might get there.

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Notes

1 According to Chantal Mouffe (2000), two paradoxes are the liberal tradition (rule of law, defense of human rights, respect for individual liberty) and the democratic tradition (equality, identity between governed and governing, popular sovereignty, or direct forms).
2 For good examples of the ecological benefits of democracy, see De-Shalit (2000), Menegat (2002), and Winslow (2005).
3 For example, a significant and robust negative linear relationship has been found between certain pollutant concentrations and the level of democracy: the higher the level of democracy, the lower the ambient pollution level (Winslow, 2005).
4 The authors measured political repression by political and civil freedom, the organized proportion of the labor force, and per capita spending on the military.
5 By "perceptions," I mean that environmental crises are socially constructed. This does not deny the existence of physical/material properties or "real" problems but questions singular, empirical versions of "truth" or reality.
6 A caveat is necessary here. Although these cultures may include indigenous groups, many of these may be authoritarian, misogynistic, and based on spiritual or religious principles that are dogmatically resistant to democratic change.
7 For their conception of "environmentalism of the poor" and interesting comparisons of Northern environmentalism with other countries, see Martinez-Alier and Guha (1997). See also Martinez-Alier (2002).
8 For example, Mexican farmer Rodolfo Montiel was arrested, tortured, and sentenced to six years in jail after organizing a campaign to halt Boise Cascade's commercial logging in the state of Guerrero. President Vicente Fox had him released on 8 November 2001.
9 For a British example of reform versus radical environmentalism, see Rüdig (1995).
10 See www.environmentalhealth.org/Metales1.html#Comite on the Environmental Health Coalition website, "one of the oldest and most effective grassroots organizations in the United States, using social change strategies to achieve environmental justice."
11 *Ejidos* are communal land holdings that were given legal standing through Article 27 of the 1917 Mexican Constitution.
12 Some forest-based communities in Mexico have had their forests certified by SmartWood according to the principles and standards of the Forest Stewardship Council (FSC).

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